

Class: FY BSc

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Chapter: Unit 2 Chapter 2

Chapter Name: Types of Financial Instruments

Today's Agenda

1. Overview
2. Fixed Income
3. Equities – Listed and Unlisted
4. Derivatives
 - a) Futures and Forwards
 - b) Options
 - c) Swaps
5. Money market instruments
 - a) Treasury Bills
 - b) Commercial Paper and Certificate of Deposit
 - c) Repo and reverse repo

1 Overview

Financial instruments are assets that can be traded, creating value for investors and facilitating the flow of capital in the economy. Financial instruments are tools used by individuals and organizations to allocate capital, manage risk, and generate returns. They can be categorized based on their characteristics and underlying assets:

- **Equity Instruments:** Represent ownership in a company and entitle shareholders to a portion of the company's profits.
Examples: Common stocks, Preferred stocks, Equity mutual funds.
- **Debt Instruments:** Involve borrowing and lending arrangements where one party (the issuer) borrows capital from another party (the investor) and agrees to repay the principal amount along with interest over time.
Examples: Bonds, Treasury securities, Corporate bonds.
- **Derivative Instruments:** Derive their value from an underlying asset or group of assets and are used for hedging, speculation, or gaining exposure to specific risks.
Examples: Options, Futures contracts, Swaps.

Understanding the characteristics and functionalities of these financial instruments is essential for making informed investment decisions, managing risk exposure, and achieving financial goals effectively.

2 Fixed Income

Bonds and debentures

A bond is a fixed-income instrument that represents a loan made by an investor to a borrower (typically corporate or governmental). Bonds are used by companies, municipalities, states, and sovereign governments to finance projects and operations. Owners of bonds are debtholders, or creditors, of the issuer.

When companies or other entities need to raise money to finance new projects, maintain ongoing operations, or refinance existing debts, they may issue bonds directly to investors. The borrower (issuer) issues a bond that includes the terms of the loan, interest payments that will be made, and the time at which the loaned funds (bond principal) must be paid back (maturity date). The interest payment (the coupon) is part of the return that bondholders earn for loaning their funds to the issuer. The interest rate that determines the payment is called the coupon rate. The actual market price of a bond depends on a number of factors: the credit quality of the issuer, the length of time until expiration, and the coupon rate compared to the general interest rate environment at the time. The face value of the bond is what will be paid back to the lender once the bond matures.

A debenture is a type of bond or other debt instrument that is unsecured by collateral. Since debentures have no collateral backing, they must rely on the creditworthiness and reputation of the issuer for support. Both corporations and governments frequently issue debentures to raise capital or funds.

2 Fixed Income

Two features of a bond—credit quality and time to maturity—are the principal determinants of a bond's coupon rate. If the issuer has a poor credit rating, the risk of default is greater, and these bonds pay more interest. Bonds that have a very long maturity date also usually pay a higher interest rate. This higher compensation is because the bondholder is more exposed to interest rate and inflation risks for an extended period.

The very highest quality bonds are called “investment grade” and include debt issued by the U.S. government and very stable companies, such as many utilities. Bonds that are not considered investment grade but are not in default are called “high yield” or “junk” bonds. These bonds have a higher risk of default in the future and investors demand a higher coupon payment to compensate them for that risk.

Zero coupon bonds

Zero-coupon bonds (Z-bonds) do not pay coupon payments and instead are issued at a discount to their par value that will generate a return once the bondholder is paid the full-face value when the bond matures. U.S. Treasury bills are a zero-coupon bond.

Walkthrough of the NSE website to understand how does the trade details of a Bond look like and concepts such as ISIN and its nomenclature

3 Equity

Equity shares are long-term financing sources for any company. These shares are issued to the general public and are non-redeemable in nature. Investors in such shares hold the right to vote, share profits and claim assets of a company.

Equity shares have the following characteristics, which make it one of the most popular investment tools in a stock market –

- Most types of equity shares include voting rights to an investor, allowing him/her to choose individuals responsible to run the business. Electing efficient managers allows a company to increase its annual turnover, thereby increasing investors' average dividend income.
- Equity shareholders are eligible to realize additional profits generated by a company in a fiscal year. This increases the total wealth of individual investors having a considerable investment in equity shares of a company.
- Even though equity shares are not repaid until a business closes down, equity shares already issued can be traded in the secondary capital market. Thus, investors can withdraw funds from a company upon their discretion. This ensures massive wealth creation through capital appreciation of such shares.

3 Equity

Equity share market tends to be the most volatile segment in a stock market, profoundly affected by minor fluctuations. Returns on equity investments are paid out after all other obligations of a company have been met. During market downturn, production cycle of a business is affected, thereby reducing profits generated by a business. This lower share of profit is used up to meet all existing liabilities before funds are disbursed to as equity investment returns. Thus, equity markets tend to be adversely affected during market downturn.

Listed equity

Listed equity represents shares of publicly traded companies, readily available for trading on stock exchanges. This category offers high liquidity and price transparency, making it easier for investors to buy and sell shares. However, listed equities are exposed to market risks, including volatility and fluctuations influenced by economic conditions and investor sentiment. While they provide opportunities for capital appreciation and dividend income, investors must also navigate corporate governance risks and comply with regulatory requirements.

3 Equity

Unlisted equity

On the other hand, unlisted equity refers to shares of privately held companies not traded on public exchanges. These investments typically offer lower liquidity and limited transparency compared to their listed counterparts. Illiquidity and valuation risks are prevalent and exit opportunities may be constrained. However, successful investments in unlisted equity can yield significant capital gains, and investors may have more control over the company's direction and decision-making processes.

Both listed and unlisted equity investments come with their own set of characteristics, risks, and potential returns. Understanding these factors is essential for investors to effectively manage their portfolios and achieve their financial objectives.

4 Derivatives

What are derivatives?

A derivative can be defined as a financial instrument whose value depends on (or derives from) the values of other, more basic, underlying variables.

Very often the variables underlying derivatives are the prices of traded assets. The underlying financial asset can be a security or set of assets (like an index).

4 Derivatives

Motivation behind derivatives

Derivatives were created out of the need of financial markets. They can and do serve a wide variety of purposes and that is the reason that they exist.

To Hedge

Most companies are in the business of manufacturing, or retailing or wholesaling, or providing a service. They have no skills or expertise in predicting variables such as interest rates, exchange rates, and commodity prices. It makes sense for them to hedge the risks associated with these variables as they become aware of them. Derivatives are wonderful instruments to assist in hedging. They provide a way to lock in prices, hedge against unfavorable movements in rates, and mitigate risks—often for a limited cost.

For example, say that Nov. 6, 2019, Company-A buys a futures contract for oil at a price of \$62.22 per barrel that expires Dec. 19, 2019. The company does this because it needs oil in December and is concerned that the price will rise before the company needs to buy. Buying an oil futures contract hedges the company's risk because the seller on the other side of the contract is obligated to deliver oil to Company-A for \$62.22 per barrel once the contract has expired

4 Derivatives

To Speculate

The second most common reason behind the usage of derivatives is speculation. Now, this may not seem like a legitimate reason. However, speculators are necessary participants in any market as they provide liquidity. Speculators have no interest in the underlying asset and take part in the contract because they believe that they can make a gain out of the price movements.

For instance, if you believe that the US dollar will depreciate significantly against the Euro in the next month, derivatives contracts enable you to take a position on this in the market. Since derivative contracts are extremely leveraged, speculation in the derivative market is a highly risky business. However, there are people who specialize in doing so.

There are some other reasons as well, to having derivative instruments in the market. However, these two remain on top

To arbitrage

Arbitrage describes the act of buying a security in one market and simultaneously selling it in another market at a higher price, thereby enabling investors to profit from the temporary difference in cost per share.

4 Derivatives

Type of derivative instruments

We will consider the following types of derivatives further:

1. Forwards
2. Futures
3. Options
4. Swaps

Additionally, exchange traded derivatives and over the counter derivatives were also covered during the lecture

4 Derivatives - Forwards

Forwards

It is an agreement to buy or sell an asset at a certain future time for a certain price. It is a relatively simple derivative.

- One of the parties to a forward contract assumes a long position and agrees to buy the underlying asset on a certain specified future date for a certain specified price.
- The other party assumes a short position and agrees to sell the asset on the same date for the same price.

4 Derivatives - Futures

Futures

A futures contract is a standardized, exchange-traded agreement between two parties to buy or sell an asset at a certain time in the future for a certain price.

- Futures contracts traded on exchanges. To make trading possible, the exchange specifies certain standardized features of the contract.
- For example, if it is a commodity future, say grains, then one has to specify the quality, quantity etc. about the commodity in the contract. Like suppose, a future contract to trade 100 kgs of Grade A quality grain for a certain specified price.
- As the two parties to the contract do not necessarily know each other, the exchange also provides a mechanism that gives the two parties a guarantee that the contract will be honored.

4 Derivatives - Options

Options

Options are traded both on exchanges and in the over-the-counter market. There are two types of option.

A call option gives the holder the right to buy the underlying asset by a certain date for a certain price.

A put option gives the holder the right to sell the underlying asset by a certain date for a certain price.

4 Derivatives - Options

Options Terminology

- The price in the contract is known as the exercise price or strike price.
- The date in the contract is known as the expiration date or maturity.
- People who buy options are called holders – they are said to have a long position in the contract.
- People who sell options are called writers of options – they are said to have a short position in the contract.
- It should be emphasized that an option gives the holder the right to do something. The holder does not necessarily have to exercise this right, he has an option whether or not to exercise. Hence it is termed as an Option contract.
- The holder of the option pays a fee to the writer for gaining this right. It is called Premium.

4 Derivatives - Options

Participants in Options Market

There are four types of participants in options markets:

1. Buyers of calls
2. Sellers of calls
3. Buyers of puts
4. Sellers of puts.

4 Derivatives - Options

American and European Options

- American options can be exercised at any time up to the expiration date.
- European options can be exercised only on the expiration date itself.

The distinction between American and European options has nothing to do with geography, only with early exercise.

Because the right to exercise early has some value, an American option typically carries a higher premium than an otherwise identical European option. This is because the early exercise feature is desirable and commands a premium.

Concepts covered during lectures

- Payoff diagrams along with different scenario of underlying price
- Payoff formula for option participants
- In the money, out of the money and at the money options

4 Derivatives - Swaps

A swap is a derivative contract through which two parties exchange the cash flows or liabilities from two different financial instruments.

Most swaps involve cash flows based on a notional principal amount such as a loan or bond, although the instrument can be almost anything. Usually, the principal does not change hands.

The most common kind of swap is an interest rate swap. Swaps do not trade on exchanges, and retail investors do not generally engage in swaps. Rather, swaps are over-the-counter contracts primarily between businesses or financial institutions that are customized to the needs of both parties

4 Derivatives - Swaps

Concepts covered during lecture

- Concept and overview of interest rate swaps
- Types of legs and construct of interest rate swaps
- Purpose of entering into interest rate swaps

The above concepts were also understood for cross currency swaps

4 Derivatives – Types of traders

- Derivatives markets have been outstandingly successful. The main reason is that they have attracted many different types of traders and have a great deal of liquidity.
- When an investor wants to take one side of a contract, there is usually no problem in finding someone who is prepared to take the other side.
- Three broad categories of traders can be identified: hedgers, speculators, and arbitrageurs. We look at how these traders use derivative instruments for their trading in detail.

4 Derivatives – Hedgers

Hedgers are investors, their objective is to use different markets to minimize or eliminate a particular risk that they face from the potential future movements in the market variables

Hedging using Forwards – Forward contracts are designed to neutralize risk by fixing the price that the hedger will pay or receive for the underlying asset. For example, an airline company will enter into a long position to reduce the risk, related to fluctuation in the price of jet fuel.

Hedging using Options – Options provide insurance. They offer a way for investors to protect themselves against adverse price movements in the future while still allowing them to benefit from favourable price movements. Unlike forwards, options involve the payment of an up-front fee

Hedgers stand not to make a huge gain but moderately to protect their existing position against the price fluctuations. There is no guarantee that the outcome with hedging will be better than the outcome without hedging.

4 Derivatives – Speculators

Speculators are investors who bet on the future direction of a market variable; either they bet that the price of an asset will go up or down.

- Speculative trading, refers to the act of conducting a financial transaction that has substantial risk of losing value but also holds the expectation of a significant gain or other major value.
- Investors use derivatives to bet on the future price of the asset through speculation.
- Large speculative plays can be executed cheaply because options offer investors the ability to leverage their positions at a fraction of the cost of an underlying asset.
- When a speculator uses futures, the potential loss as well as the potential gain is very large. When options are used, no matter how bad things get, the speculator's loss is limited to the amount paid for the options.

4 Derivatives – Arbitrageurs

Arbitrageurs are investors who trade in two different markets or exchanges; their aim is locking in a riskless profit by simultaneously entering into transaction in two or more markets.

- Arbitrage involves locking in a riskless profit by simultaneously entering into transactions in two or more markets.
- We can say that the very existence of arbitrageurs means that in practice only very small arbitrage opportunities are observed in the prices that are quoted in most financial markets.
- Most arguments concerning futures prices, forward prices, and the values of option contracts are based on the assumption that no arbitrage opportunities exist.

5 Money Market

The money market is an organized exchange market where participants can lend and borrow short-term, high-quality debt securities with average maturities of one year or less. It enables governments, banks, and other large institutions to sell short-term securities to fund their short-term cash flow needs.

Types of instruments that would be covered here include:

- Certificate of deposit
- Commercial Paper
- Treasury Bills
- Repo and reverse repo

5 Money Market

Certificate of deposit

A certificate of deposit (CD) is a type of savings account that pays a fixed interest rate on money held for an agreed upon period of time. Offered by both banks and credit unions, CDs differ from standard savings accounts in that CD funds must remain untouched for the entirety of their term—or you'll incur a penalty. CDs usually pay a higher interest rate than savings accounts as an incentive for giving up your withdrawal flexibility.

Commercial paper

Commercial paper is an unsecured form of promissory note that pays a fixed rate of interest. It is typically issued by large banks or corporations to cover short-term receivables and meet short-term financial obligations, such as funding for a new project. As with any other type of bond or debt instrument, the issuing entity offers the paper assuming that it will be in a position to pay both interest and principal by maturity. It is seldom used as a funding vehicle for longer-term obligations because other alternatives are better suited for that purpose.

5 Money Market

Treasury bills

A Treasury bill (T-Bill) is a short-term U.S. government debt obligation backed by the Treasury Department with a maturity of one year or less. Treasury bills are usually sold in denominations of \$1,000. However, some can reach a maximum denomination of \$5 million in non-competitive bids. These securities are widely regarded as low-risk and secure investments. T-bills can have maturities of just a few days, but the maturities listed by the Treasury are four, eight, 13, 17, 26, and 52 weeks

5 Money Market

Repo and reverse repo

The repurchase agreement (repo or RP) and the reverse repo agreement (RRP) are two key tools used by many large financial institutions, banks, and some businesses. These short-term agreements provide temporary lending opportunities that help to fund ongoing operations. The central bank also uses the repo and RRP as a method to control the money supply.

Essentially, repos and reverse repos are two sides of the same coin—or rather, transaction—reflecting the role of each party. A repo is an agreement between parties where a buyer agrees to temporarily purchase a basket or group of securities for a specified period. The buyer agrees to sell those same assets back to the original owner at a slightly higher price.

Both the repurchase and reverse repurchase portions of the contract are determined and agreed upon at the outset of the deal.

A repurchase agreement (RP) is a short-term loan where both parties agree to the sale and future repurchase of assets within a specified contract period. The seller sells a security with a promise to buy it back at a specific date and at a price that includes an interest payment.

5 Money Market

A reverse repurchase agreement (RRP) is the act of buying securities temporarily with the intention of selling those same assets back in the future at a profit. This process is the opposite side of the coin to the repurchase agreement. To the party selling the security with the agreement to buy it back, it is a repurchase agreement. To the party buying the security and agreeing to sell it back, it is a reverse repurchase agreement.